WHAT IS CLAIMED IS:

Sub A2

1. A bandwidth monitoring method suitable for use in a network for transmitting specific type of packets in preference to packets other than the specific type of packets, comprising the steps of:

when a packet flows into the network, monitoring whether the packet violates a contract bandwidth being under contract with a source of the packet;

judging whether the packet corresponds to the specific type of packet; and

when the packet does not violate the contract bandwidth and does not belong the specific type of packet, transmitting the packet as the specific type of packet.

2. The bandwidth monitoring method according to claim 1, wherein said packet has a header, and said judging as to whether the packet corresponds to the specific type of packet is performed according to a value in the header.

3. The bandwidth monitoring method according to claim 2, further comprising the step of:

when the value in the header does not correspond to a specific value indicative of the specific type of packet, changing the value in the header to said specific value.

4. The bandwidth monitoring method according to claim 2, wherein said header has a priority field and said judging as to whether the packets correspond to the specific type of packet is performed according to the value in the priority field.

5. The bandwidth monitoring method according to claim 1, wherein said monitoring is carried out by using a leaky bucket algorithm with a first depth of bucket when the packet is not the specific type of packet, and a leaky bucket algorithm with a second depth of bucket different from the first depth when the packet corresponds to the specific type of packet, thereby to judge whether or not said packet violates the contract bandwidth being under contract with the source of the packet.

6. A bandwidth monitoring method for use in a network for transmitting specific type of packets in preference to the other packets having types other than the specific type, comprising the steps of:

when a packet flows into the network, monitoring whether the packet violates a contract bandwidth being under contract with a source of the packet;

determining whether the packet corresponds to the specific type of packet; and

transmitting the packet as a packet having the specific type when a bandwidth being used by the source of the packet is less than or equal to a first bandwidth smaller than the contract bandwidth and the packet does not correspond to the specific type of packet.

7. The bandwidth monitoring method according to claim 6, further comprising the step of:

transmitting the packet as a packet other than the specific type of packet when the bandwidth being used by the source of the packet exceeds the first bandwidth and the packet does not correspond to the specific type of packet.

8. The bandwidth monitoring method according to claim 6, further comprising the step of:

transmitting the packet as a packet other than the specific type of packet when the bandwidth being used by the source of the packet exceeds the contract bandwidth and the packet corresponds to the specific type of packet.

9. The bandwidth monitoring method according to claim

6, wherein said monitoring is carried out by using a leaky bucket algorithm with a first depth of bucket when the packet is not the specific type of packet, and a leaky bucket algorithm with a second depth of bucket when the packet corresponds to the specific type of packet, said first depth being different from said first depth, thereby to judge whether or not said packet violates the contract bandwidth being under contract with the source of the packet.

10. A bandwidth monitoring device for monitoring a bandwidth of packets which flow into a network, comprising:

flow detecting means for detecting a flow of a series of packets based on at least one of address information, use identification information and a network priority of an input packet, said network priority identifying the priority of the input packet within the network, and for determining a flow identifier indicative of an identifier of a flow to which the input packet belongs and a flow priority indicative of the priority of the input packet within the flow;

a bandwidth check table including at least one entry comprising bandwidth monitoring control information indicative of control information for bandwidth monitoring and a plurality of said network priorities;

bandwidth check table control means for reading out an entry corresponding to the flow identifier from said bandwidth check table;

check result decision means for performing a decision as to the conformance or violation of the bandwidth for the input packet, based on the flow priority, bandwidth monitoring control information within the entry read out by said bandwidth check table control means, and a value of a timer for indicating the present time; and

priority decision means for determining a network priority of the input packet from the result of decision by said check result deciding means and a plurality of network priorities read out by said bandwidth monitoring table control means.

11. The bandwidth monitoring device according to claim 10, wherein said check result decision means uses a leaky bucket algorithm having a plurality of bucket's depths as a bandwidth monitoring algorithm, and

the entry of said bandwidth check table indicates a depth of bucket for the priority packets and a depth of bucket for packets other than the priority packet.

12. A bandwidth monitoring device for monitoring a

bandwidth of packets flow into a network, comprising:

connection priority decision means for determining a connection priority indicative of the priority of an input packet within a connection based on connection information of the input packet;

a bandwidth check table having at least one entry comprising bandwidth monitoring control information indicative of control information for bandwidth monitoring and network priorities corresponding to information for identifying a plurality of priorities in the network;

bandwidth check table control means for reading out an entry corresponding to an identifier of the connection from said bandwidth check table;

check result decision means for performing a decision as to the conformance or violation of the bandwidth for the input packet, based on the connection priority, bandwidth monitoring control information within the entry read out by said bandwidth check table control means, and a value of a timer for indicating the present time; and

priority decision means for determining a network priority of said input packet from the result of decision by said check result decision means and a plurality of network priorities read out by said bandwidth monitoring table control means.

13. The bandwidth monitoring device according to claim 12, wherein said check result decision means uses a leaky bucket algorithm having a plurality of bucket's depths as a bandwidth monitoring algorithm, and

the entry of said bandwidth check table indicates a depth of bucket for the priority packets and a depth of bucket for packets other than the priority packet.

A2

add A2